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FILE 'USPAT' ENTERED AT 12:30:28 ON 24 SEP 1998

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 *       WELCOME TO THE             *
 *    U.S. PATENT TEXT FILE         *
 ************************************

=> file epoabs

FILE 'EPOABS' ENTERED AT 12:30:44 ON 24 SEP 1998

 ************************************
 *  EUROPEAN PATENT ABSTRACTS
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=> s 000126/dn

L1          0 000126/DN

=> s0 000126/dn

'S0' IS NOT A RECOGNIZED COMMAND

=> s 0000126/dn

L2          0 0000126/DN

=> s 9623873/dn

L3          0 9623873/DN

=> s 000336/dn

L4          1 000336/DN

=> d


1. EP 00000336A1, Jan. 24, 1979,
N-benzylpyrimidinyl-amidines, process
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DR
SCHARWAECHTER, et al., C07D 239/48; A61K 31/505;
C07D 401/12; C07D
403/12; C07D 413/12

=> s 0056/dn

L5          0 0056/DN

=> s 5,364,782/pn

L6          0 5,364,782/PN

=> file uspat epoabs jpoabs

FILE 'USPAT' ENTERED AT 12:41:40 ON 24 SEP 1998

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FILE 'EPOABS' ENTERED AT 12:41:40 ON 24 SEP 1998

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 *  EUROPEAN PATENT ABSTRACTS
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FILE 'JPOABS' ENTERED AT 12:41:40 ON 24 SEP 1998

 **********************************
 *  JAPANESE PATENT ABSTRACTS
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28, 1998, FOR THE  *
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(JPOABS).          *
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PATENT OFFICE FILE  *
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IRD CNOABS

=> s 5,364,782/pn

FILE 'USPAT'
L7        1 5,364,782/PN
           (5364782/PN)

FILE 'EPOABS'
L8        0 5,364,782/PN

FILE 'JPOABS'
NUMERIC VALUE NOT VALID '5,364,782'

TOTAL FOR ALL FILES
L9        1 5,364,782/PN

=> d fro



US PAT NO:    **5,364,782** [IMAGE AVAILABLE]
L9: 1 of 1
```

DATE ISSUED: Nov. 15, 1994
TITLE: Mutant microbial .alpha.-amylases with increased thermal,
acid and/or alkaline stability
INVENTOR: Wilhelmus J. Quax, Voorschoten, Netherlands
Yves Laroche, Brussels, Belgium
Adrianus W. H. Vollebregt, Naaldwijk, Netherlands
Patrick Stanssens, St. Denijs Westrem, Belgium
Marc Lauwereys, Haaltert, Belgium
ASSIGNEE: Gist-Brocades N.V., Delft, Netherlands (foreign corp.)
Plant Genetic Systems N.V., Brussels, Belgium (foreign
corp.)
APPL-NO: 07/623,953
DATE FILED: Nov. 29, 1990
PCT-FILED: Jun. 27, 1990
PCT-NO: PCT/EP90/01042
371-DATE: Dec. 2, 1990
102(E)-DATE: Dec. 2, 1990
PCT-PUB-NO: WO91/00353
PCT-PUB-DATE: Jan. 10, 1991
FRN-PRIOR: European Patent Office89201735 Jun. 29, 1989
INT-CL: [5] C12N 9/28; C12N 15/56; C12N 1/21; D06M 16/00
US-CL-ISSUED: 435/202, 252.3, 263, 275, 320.1; 536/23.2
US-CL-CURRENT: 435/202, 252.3, 263, 275, 320.1; 536/23.2
SEARCH-FLD: 435/202, 69.1, 320.1, 252.3, 263, 275; 536/23.2
REF-CITED:

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ART-UNIT: 184
PRIM-EXMR: Keith C. Furman
LEGAL-REP: Barbara Rae-Venter

ABSTRACT:

Thermostable and acid stable .alpha.-amylases are provided as expression products of genetically engineered .alpha.-amylase genes isolated from microorganisms, preferably belonging to the class of Bacilli. Both chemical and enzymatic mutagenesis methods are e.g. the bisulphite method and enzymatic misincorporation on gapped heteroduplex DNA. The mutant .alpha.-amylases have superior properties, e.g. improved thermostability over a broad pH range, for industrial application in starch processing and textile desizing.

6 Claims, 15 Drawing Figures

=> d clms

US PAT NO: **5,364,782** [IMAGE AVAILABLE]
L9: 1 of 1

CLAIMS:

CLMS(1)

We claim:

1. An isolated mutant .alpha.-amylase wherein said mutant .alpha.-amylase has a replacement of at least one amino acid in a corresponding wild-type .alpha.-amylase obtainable from Bacillus licheniformis and wherein said mutant .alpha.-amylase exhibits one or more improved properties relative to the wild-type .alpha.-amylase selected from the group consisting of improved thermostability, improved stability at a pH below 6.5, improved stability at a pH above 7.5, and improved acid stability as a result of said replacement, wherein said replacement is one or more amino acid replacements selected from the group consisting of Ala-111-Thr, His-133-Tyr and Thr-149-Ile.

CLMS(2)

2. A DNA encoding the mutant .alpha.-amylase claim 1.

CLMS(3)

3. An expression vector which comprises a DNA according to claim 2.

CLMS(4)

4. A host cell containing an expression vector according to claim 3.

CLMS(5)

5. A method for the degradation of starch which comprises: contacting said starch with a mutated .alpha.-amylase according claim 1 for a sufficient time and under conditions whereby said .alpha.-amylase degrades said starch.

CLMS(6)

6. A method for textile desizing which comprises: contacting sized textile with a mutated .alpha.-amylase according claim 1 for a sufficient time and under conditions whereby said sized textile is desized.

=> s alkaline (15a)amylase

FILE 'USPAT'
142438 ALKALINE
4436 AMYLASE
L10 375 ALKALINE (15A)AMYLASE

FILE 'EPOABS'
14838 ALKALINE
582 AMYLASE

L11 18 ALKALINE (15A)AMYLASE

FILE 'JPOABS'
24820 ALKALINE
1151 AMYLASE
L12 13 ALKALINE (15A)AMYLASE

TOTAL FOR ALL FILES
L13 406 ALKALINE (15A) AMYLASE

=> s bacillus (15a)l13

FILE 'USPAT'
11566 BACILLUS
L14 48 BACILLUS (15A)L10

FILE 'EPOABS'
1054 BACILLUS
L15 3 BACILLUS (15A)L11

FILE 'JPOABS'
2446 BACILLUS
L16 2 BACILLUS (15A)L12

TOTAL FOR ALL FILES
L17 53 BACILLUS (15A) L13

=> s l17 and py>1995

FILE 'USPAT'
363232 PY>1995
L18 15 L14 AND PY>1995

FILE 'EPOABS'
97146 PY>1995
L19 0 L15 AND PY>1995

FILE 'JPOABS'
317148 PY>1995
L20 0 L16 AND PY>1995

TOTAL FOR ALL FILES
L21 15 L17 AND PY>1995

=> d 1-

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reductase, and adhesion-associated protein, and antibiotic therapies
based thereon; Elaine Tuomanen, et al., 435/189, 69.1, 252.3, 320.1;
530/350; 536/23.2, 23.7 [IMAGE AVAILABLE]

2. 5,780,261, **Jul. 14, 1998**, Method and system for enhanced
production of commercially important exoproteins in gram-positive
bacteria; Vesa Kontinen, et al., 435/69.1, 69.8, 71.1, 71.2, 252.3,
252.31, 252.5, 254.11, 320.1 [IMAGE AVAILABLE]

3. 5,770,424, **Jun. 23, 1998**, DNA constructs and methods of producing
xylanolytic enzymes; Helle Outtrup, et al., 435/200, 252.3, 252.31,
320.1; 536/23.2 [IMAGE AVAILABLE]

4. 5,733,723, **Mar. 31, 1998**, Stable gene amplification in
chromosomal DNA of prokaryotic microorganisms; Christiaan A. G. van
Eekelen, et al., 435/6, 222, 252.31, 485 [IMAGE AVAILABLE]

5. 5,681,715, **Oct. 28, 1997**, Process for preparing lipases; Steen
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320.1, 325; 536/23.2, 23.4, 23.7 [IMAGE AVAILABLE]

6. 5,650,326, **Jul. 22, 1997**, Promoter element and signal peptide of
a gene encoding a Bacillus alkaline protease and vectors comprising same;
Alan P. Sloma, et al., 435/320.1, 69.1, 252.3, 252.31; 530/324; 536/23.1,
24.1 [IMAGE AVAILABLE]

7. 5,635,468, **Jun. 3, 1997**, Liquefying alkaline .alpha.-amylase,
process for producing the same, and detergent composition containing the
same; Katsutoshi Ara, et al., 510/392; 435/201, 202, 203, 204; 510/530
[IMAGE AVAILABLE]

8. 5,622,850, **Apr. 22, 1997**, Recombinant methods for the production
of a bacillus alkaline protease; Alan P. Sloma, et al., 435/221, 69.1,
220, 252.3, 252.31, 320.1; 536/23.2, 23.7, 24.1 [IMAGE AVAILABLE]

9. 5,622,841, **Apr. 22, 1997**, Method for the production of
heterologous polypeptides using a promoter element and signal peptide of
a bacillus gene encoding an alkaline protease; Alan P. Sloma, et al.,
435/69.1, 69.7, 252.3, 252.31; 536/23.2, 23.4, 24.1 [IMAGE AVAILABLE]

10. 5,621,089, **Apr. 15, 1997**, Nucleic acid constructs for the
production of a Bacillus alkaline protease; Alan P. Sloma, et al.,
536/23.2; 435/69.1, 220, 221, 252.3, 252.31, 320.1; 536/23.7, 24.1 [IMAGE
AVAILABLE]

11. 5,618,933, **Apr. 8, 1997**, Sugar-based polymers; Jonathan S.
Dordick, et al., 536/115, 116, 119, 120 [IMAGE AVAILABLE]

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involved in the production and secretion of a protein, recombinant DNA
including the whole or a part of the DNA base sequence, and method of
producing proteins by use of the recombinant DNA; Yoshio Furutani, et
al., 435/69.1, 252.3, 252.31, 320.1 [IMAGE AVAILABLE]

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filamentous fungi, processes for making same, and vectors for making
same; Randy M. Berka, et al., 435/69.1, 69.7, 69.8, 183, 205, 254.3,
320.1; 536/23.2, 23.74, 24.1 [IMAGE AVAILABLE]

14. 5,565,348, **Oct. 15, 1996**, Alkaline protease from Bacillus
proteolyticus species; Ernest W. Boyer, et al., 435/221, 220; 510/320,
321, 392, 393, 530 [IMAGE AVAILABLE]

15. 5,518,917, **May 21, 1996**, Bacillus proteolyticus species which
produce an alkaline protease; Ernest W. Boyer, et al., 435/252.5, 832,
839 [IMAGE AVAILABLE]

=> d 7 fro

US PAT NO: 5,635,468 [IMAGE AVAILABLE]
L21: 7 of 15
DATE ISSUED: **Jun. 3, 1997**
TITLE: Liquefying alkaline .alpha.-amylase, process for producing
the same, and detergent composition containing the same
INVENTOR: Katsutoshi Ara, Oyama, Japan
Katsuhisa Saeki, Kawachi-machi, Japan
Kazuaki Igarashi, Kaminokawa-machi, Japan
Mikio Takaiwa, Tochigi, Japan
Takaaki Uemura, Hazaki-machi, Japan
Shuji Kawai, Kawachi-machi, Japan
Susumu Ito, Utsunomiya, Japan
Hiroshi Hagihara, Ichikai-machi, Japan
Tohru Kobayashi, Utsunomiya, Japan
Atsushi Tanaka, Wakayama, Japan
Eiichi Hoshino, Wakayama, Japan
ASSIGNEE: Kao Corporation, Tokyo, Japan (foreign corp.)
APPL-NO: 08/362,493
DATE FILED: Jan. 11, 1995
PCT-FILED: May 19, 1994
PCT-NO: PCT/JP94/00805
371-DATE: Jan. 11, 1995
102(E)-DATE: Jan. 11, 1995
PCT-PUB-NO: WO94/26881
PCT-PUB-DATE: Nov. 24, 1994
FRN-PRIOR: Japan 5-117392 May 19, 1993
INT-CL: [6] C11D 3/386
US-CL-ISSUED: 510/392, 531; 435/201, 202, 203, 204
US-CL-CURRENT: 510/392; 435/201, 202, 203, 204; 510/530
SEARCH-FLD: 252/174.12, DIG.12; 435/201, 202, 203, 204; 510/392, 530
REF-CITED:

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WO9402597	2/1994	World Intellectual Property Organization
WO95/26397	10/1995	World Intellectual Property Organization

ART-UNIT: 115
PRIM-EXMR: Paul Lieberman
ASST-EXMR: Kery A. Fries
LEGAL-REP: Oblon, Spivak, McClelland, Maier & Neustadt, P.C.

ABSTRACT:

The present invention relates to a liquefying alkaline .alpha.-amylase
having the enzymatic properties described below, a production process
thereof and a detergent composition containing the same.
1) Action:
It hydrolyzes .alpha.-1,4-glucosidic linkages in starches, amylose,
amylopectin and partial degradation products thereof and from amylose,
forms glucose (G1), maltose (G2), maltotriose (G3), maltotetraose (G4),
maltopentaose (G5) and maltohexaose (G6). It however does not act on
pullulan.
2) Isoelectric point:
It has an isoelectric point higher than 8.5 when measured by an
isoelectric focusing electrophoresis.
The amylase according to the present invention has a liquefying activity
capable of permitting degrading starches and starchy polysaccharides at
high random, and has an optimum pH on the alkaline side. Owing to the
high isoelectric point, it can be purified readily. Detergents with the
amylase incorporated therein have excellent detergency especially against
the soil of smeared food.
23 Claims, 5 Drawing Figures

=> s l13 and py=1995

FILE 'USPAT'
113939 PY=1995
L22 16 L10 AND PY=1995

FILE 'EPOABS'
189921 PY=1995
L23 6 L11 AND PY=1995

FILE 'JPOABS'
310420 PY=1995
L24 2 L12 AND PY=1995

TOTAL FOR ALL FILES
L25 24 L13 AND PY=1995

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1. 5,474,915, **Dec. 12, 1995**, Method of making poly(sugar acrylates)
using hydrolytic enzymes; Jonathan S. Dordick, et al., 435/72, 95, 99,
101, 135; 536/115, 116, 119, 120, 122, 124, 126 [IMAGE AVAILABLE]

2. 5,466,601, **Nov. 14, 1995**, Selectively removing embedded lint
precursors with cellulase; Terry L. Jenkins, et al., 435/263; 8/112, 401;
19/40; 435/277 [IMAGE AVAILABLE]

3. 5,466,575, **Nov. 14, 1995**, Process for the manufacture of wholly
microfabricated biosensors; Stephen N. Cozzette, et al., 435/6; 204/403,
411, 412, 414, 415, 416, 417, 418, 419, 430, 431, 432; 422/82.01;
427/2.13, 96; 435/177, 817; 436/149, 806 [IMAGE AVAILABLE]

4. 5,444,046, **Aug. 22, 1995**, Amylase inhibitors; Toshiyuki Miyazaki,
et al., 514/12; 426/656; 530/374, 375, 416 [IMAGE AVAILABLE]

5. 5,431,842, **Jul. 11, 1995**, Liquid detergents with ortho-substituted phenylboronic acids for inhibition of proteolytic
enzyme; Rajan K. Panandiker, et al., 510/321; 264/189, 264; 510/300, 339,
393, 465 [IMAGE AVAILABLE]

6. 5,429,766, **Jul. 4, 1995**, Detergent composition containing
alkaline pullylanase enzyme; Taeko Sone, et al., 510/392; 435/210, 832;
510/226, 320, 323 [IMAGE AVAILABLE]

7. 5,429,765, **Jul. 4, 1995**, Detergent and method for producing the
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225; 510/306, 320, 349, 356, 392, 509 [IMAGE AVAILABLE]

8. 5,427,711, **Jun. 27, 1995**, Synthesized inorganic ion exchange
material and detergent composition containing the same; Mikio Sakaguchi,
et al., 510/376; 423/331, 593; 510/306, 313, 317, 320, 348, 374, 511, 531
[IMAGE AVAILABLE]

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Arne Astrup, 514/264, 653 [IMAGE AVAILABLE]

10. 5,419,778, **May 30, 1995**, Detergent compositions containing
substantially pure EG III cellulase; Kathleen A. Clarkson, et al.,
8/116.1, 101; 435/209, 264; 510/320, 321, 530 [IMAGE AVAILABLE]

11. 5,411,666, **May 2, 1995**, Methods for removing biofilm from or
preventing buildup thereof on surfaces in industrial water systems; C.
George Hollis, et al., 210/632; 162/161; 210/764 [IMAGE AVAILABLE]

12. 5,403,745, **Apr. 4, 1995**, Determination of analytes in biological
fluids in the presence of substances interfering with assays therefor;
James F. Ollington, et al., 435/11; 422/58, 61, 72; 435/7.4, 17, 22, 26,
962; 436/71, 518, 528, 531, 536, 538, 539, 541, 807, 824, 825 [IMAGE
AVAILABLE]

13. 5,387,521, **Feb. 7, 1995**, Gene expression in bacilli; Eugenio
Ferrari, 435/252.31, 183, 198, 209, 221 [IMAGE AVAILABLE]

14. 5,385,837, **Jan. 31, 1995**, Alkaline proteases derived from
Bacillus proteolyticus; Ernest W. Boyer, et al., 435/221, 220, 222;
510/320, 321, 392, 393, 530 [IMAGE AVAILABLE]

15. 5,385,681, **Jan. 31, 1995**, Scouring agent composition for fabric;
Toshio Sato, et al., 8/137; 510/355, 356, 357, 425, 427, 430, 513 [IMAGE
AVAILABLE]

16. 5,378,623, **Jan. 3, 1995**, Phospholipase A1, process for its
preparation and the use thereof; Atsushi Hattori, et al., 435/198, 128,
131 [IMAGE AVAILABLE]

17. US 05474915A, **Dec. 12, 1995**, Method of making poly(sugar
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19. EP 00670367A1, **Sep. 6, 1995**, LIQUEFYING **ALKALINE**
-g(a)-**AMYLASE**, PROCESS FOR PRODUCING THE SAME, AND DETERGENT
COMPOSITION CONTAINING THE SAME.; KATSUTOSHI ARA, et al., C12N 9/28; C11D
3/386

20. WO 09526397A1, **Oct. 5, 1995**, **ALKALINE** BACILLUS **AMYLASE**;
HELLE OUTTRUP, et al., C12N 9/28; C11D 3/386

21. WO 09522601A1, **Aug. 24, 1995**, POULTRY FOODSTUFF ENZYMES; RONALD
PUGH, C12N 9/00; A23K 1/165; A23K 1/18

22. WO 09509909A1, **Apr. 13, 1995**, AN ENZYME PREPARATION COMPRISING A
MODIFIED ENZYME; ARNE AGERLIN OLSEN, et al., C12N 9/96; C11D 3/386; C12N
9/14

23. 07-285881, **Oct. 31, 1995**, EXCITOMETABOLIC AGENT FOR ALCOHOL;
MAGOICHI YAMAGUCHI, et al., A61K 38/00; //C07K 14/415

24. 07-285880, **Oct. 31, 1995**, LIVER FUNCTION ACTIVATOR; MAGOICHI
YAMAGUCHI, et al., A61K 38/00; C07K 14/415

=> s l13 and py<1995

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FILE 'USPAT'
     1872165 PY<1995
L26       255 L10 AND PY<1995

FILE 'EPOABS'
     2560000 PY<1995
L27        12 L11 AND PY<1995

FILE 'JPOABS'
     3267620 PY<1995
L28         9 L12 AND PY<1995

TOTAL FOR ALL FILES
L29       276 L13 AND PY<1995

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   (FILE 'USPAT' ENTERED AT 12:30:28 ON 24 SEP
1998)

   FILE 'EPOABS' ENTERED AT 12:30:44 ON 24 SEP
1998
L1          0 S 000126/DN
L2          0 S 0000126/DN
L3          0 S 9623873/DN
L4          1 S 000336/DN
L5          0 S 0056/DN
L6          0 S 5,364,782/PN

   FILE 'USPAT, EPOABS, JPOABS' ENTERED AT
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L7          1 S 5,364,782/PN
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L8          0 S 5,364,782/PN
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   TOTAL FOR ALL FILES
L9          1 S 5,364,782/PN
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L10       375 S ALKALINE (15A)AMYLASE
   FILE 'EPOABS'
L11        18 S ALKALINE (15A)AMYLASE
   FILE 'JPOABS'
L12        13 S ALKALINE (15A)AMYLASE
   TOTAL FOR ALL FILES
L13       406 S ALKALINE (15A)AMYLASE
   FILE 'USPAT'
L14        48 S BACILLUS (15A)L13
   FILE 'EPOABS'
L15         3 S BACILLUS (15A)L13
   FILE 'JPOABS'
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L17        53 S BACILLUS (15A)L13
   FILE 'USPAT'
L18        15 S L17 AND PY>1995
   FILE 'EPOABS'
L19         0 S L17 AND PY>1995
   FILE 'JPOABS'
L20         0 S L17 AND PY>1995
   TOTAL FOR ALL FILES
L21        15 S L17 AND PY>1995
   FILE 'USPAT'
L22        16 S L13 AND PY=1995
   FILE 'EPOABS'
L23         6 S L13 AND PY=1995
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L24         2 S L13 AND PY=1995
   TOTAL FOR ALL FILES
L25        24 S L13 AND PY=1995
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L26       255 S L13 AND PY<1995
   FILE 'EPOABS'
L27        12 S L13 AND PY<1995
   FILE 'JPOABS'
L28         9 S L13 AND PY<1995
   TOTAL FOR ALL FILES
L29       276 S L13 AND PY<1995

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FILE LAST UPDATED: 24 Sep 1998 (980924/ED)

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=> s alkaline (15a)amylase

65605 ALKALINE
47 ALKALINES
65645 ALKALINE
(ALKALINE OR ALKALINES)
219286 ALK
63 ALKS
219321 ALK
(ALK OR ALKS)
232998 ALKALINE
(ALKALINE OR ALK)
27766 AMYLASE
4695 AMYLASES
28451 AMYLASE
(AMYLASE OR AMYLASES)
L1 753 ALKALINE (15A)AMYLASE

=> s bacillus and l1

47095 BACILLUS
3770 BACILLI
136 BACILLIS
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L2 118 BACILLUS AND L1

=> s l2 and py<1996

12847572 PY<1996
L3 103 L2 AND PY<1996

=> s l2 and py=1996

754047 PY=1996
L4 7 L2 AND PY=1996

=> d 1-

YOU HAVE REQUESTED DATA FROM 7 ANSWERS - CONTINUE? Y/(N):y

L4 ANSWER 1 OF 7 CAPLUS COPYRIGHT 1998 ACS
AN 1997:187680 CAPLUS
DN 126:185065
TI Selection for high ***alkaline*** ***amylase*** production
and fermentation conditions
AU Yan, Haolin; Su, Xin; Zhou, Lina
CS Department Microbiology, Shenyang Pharmaceutical University,
Shenyang, 110015, Peop. Rep. China
SO Weishengwuxue Zazhi (***1996***), 16(4), 23-26
CODEN: WEZAER
PB "Weishengwuxue Zazhi" Bianjibu
DT Journal
LA Chinese

L4 ANSWER 2 OF 7 CAPLUS COPYRIGHT 1998 ACS
AN 1997:94013 CAPLUS
DN 126:154433
TI Cloning of gene for liquid-type ***alkaline*** .alpha.-***amylase*** of ***Bacillus*** and use for preparation of
detergents
IN Hatada, Juji; Ozaki, Katsuya; Ara, Katsutoshi; Kawai, Shuji; Ito,
Susumu
PA Kao Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
PI JP 08336392 A2 ***19961224*** Heisei
AI JP 95-147257 19950614
DT Patent
LA Japanese

L4 ANSWER 3 OF 7 CAPLUS COPYRIGHT 1998 ACS
AN 1997:78519 CAPLUS
DN 126:216546
TI Selection of rational doses of hydrolase in formulations for
substitution therapy of digestive insufficiency
AU Belyaev, O. A.
CS St. Peterburg.Pediatr. Med. Akad., St. Petersburg, Russia
SO Khim.-Farm. Zh. (***1996***), 30(11), 52-54
CODEN: KHFZAN; ISSN: 0023-1134
PB Izdatel'stvo Folium
DT Journal
LA Russian

L4 ANSWER 4 OF 7 CAPLUS COPYRIGHT 1998 ACS
AN 1997:56021 CAPLUS
DN 126:71200
TI ***Bacillus*** ***alkaline*** amylopullulanase enzyme having
both ***alkaline*** pullulanase and ***alkaline*** .alpha.-***amylase*** activities, gene sequence and recombinant production
of wild-type and mutant deriv. enzymes
IN Hatada, Yuji; Igarashi, Kazuaki; Ozaki, Katsuya; Ara, Katsutoshi;
Kawai, Shuji; Ito, Susumu
PA Kao Corporation, Japan; Hatada, Yuji; Igarashi, Kazuaki; Ozaki,
Katsuya; Ara, Katsutoshi; Kawai, Shuji; Ito, Susumu

SO PCT Int. Appl., 74 pp.
CODEN: PIXXD2
PI WO 9635794 A1 ***19961114***
DS W: CN, US
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
AI WO 96-JP1243 19960510
PRAI JP 95-111547 19950510
DT Patent
LA English

L4 ANSWER 5 OF 7 CAPLUS COPYRIGHT 1998 ACS
AN 1997:30435 CAPLUS
DN 126:71558
TI Synergistic effects of permethrin and cypermethrin on the toxicity of ***Bacillus*** thuringiensis in the adult beetles of Tribolium castaneum
AU Saleem, Mushtaq A.; Shakoori, A. R.
CS Department Zoology, University the Punjab, Lahore, Pak.
SO Pak. J. Zool. (***1996***), 28(3), 191-198
CODEN: PJZOAN; ISSN: 0030-9923
PB Zoological Society of Pakistan
DT Journal
LA English

L4 ANSWER 6 OF 7 CAPLUS COPYRIGHT 1998 ACS
AN 1996:598206 CAPLUS
DN 125:268864
TI A novel maltotetraose-forming ***alkaline*** .alpha.-***amylase*** from an alkalophilic ***Bacillus*** strain, GM8901
AU Shin, Yong Chul; Byun, Si Myung
CS Department Microbiology, Gyeongsang National University, Jinju, 660-701, S. Korea
SO Prog. Biotechnol. (***1996***), 12(Enzymes for Carbohydrate Engineering), 61-82
CODEN: PBITE3; ISSN: 0921-0423
DT Journal
LA English

L4 ANSWER 7 OF 7 CAPLUS COPYRIGHT 1998 ACS
AN 1996:240926 CAPLUS
DN 124:268943
TI Hypersensitivity reactions and specific antibodies in workers exposed to industrial enzymes at a biotechnology plant
AU Biagini, Raymond E.; Driscoll, Richard J.; Bernstein, David I.; Wilcox, Thomas G.; Henningsen, Gerry M.; MacKenzie, Barbara A.; Burr, Gregory A.; Scinto, John D.; Baumgardner, Eric S.
CS Dep. Health Human Services, Public Health Service, Cincinnati, OH, 45226, USA
SO J. Appl. Toxicol. (***1996***), 16(2), 139-45
CODEN: JJATDK; ISSN: 0260-437X
DT Journal
LA English

=> s l3 and (gene or dna)

453357 GENE
207572 GENES
483797 GENE
(GENE OR GENES)
392946 DNA
12936 DNAS
394853 DNA
(DNA OR DNAS)
L5 25 L3 AND (GENE OR DNA)

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YOU HAVE REQUESTED DATA FROM 25 ANSWERS - CONTINUE? Y/(N):y

L5 ANSWER 1 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1995:112290 CAPLUS
DN 122:4112
TI Cloning of the aapT ***gene*** and characterization of its product, .alpha.-amylase-pullulanase (AapT), from thermophilic and alkaliphilic ***Bacillus*** sp. strain XAL601
AU Lee, Sang-pil; Morikawa, Masaaki; Takagi, Masahiro; Imanaka, Tadayuki
CS Dep. Biotechnol., Osaka Univ., Osaka, 565, Japan
SO Appl. Environ. Microbiol. (***1994***), 60(10), 3764-73
CODEN: AEMIDF; ISSN: 0099-2240
DT Journal
LA English

L5 ANSWER 2 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1994:264606 CAPLUS
DN 120:264606
TI Alkaline proteases of ***Bacillus*** pumilus: isolation, characterization, preparation with recombinant microorganisms, and use in washing compositions
IN Vetter, Roman; Wilke, Detlef; Moeller, Bernhard; Lerch, Martina; Muecke, Ingo; Takenberg, Meike; Konieczny-janda, Gerhard; Konieczny-Janda, Gerhard
PA Solvay Enzymes GmbH und Co. KG, Germany
SO Eur. Pat. Appl., 28 pp.
CODEN: EPXXDW
PI EP 572992 A1 ***19931208***
DS R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE
AI EP 93-108830 19930602
PRAI DE 92-4218448 19920604
DT Patent
LA German

L5 ANSWER 3 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1994:237612 CAPLUS
DN 120:237612
TI High expression vector for manufacturing proteins with ***Bacillus***
IN Ikeda, Takayuki
PA Md Res, Japan
SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
PI JP 05252964 A2 ***19931005*** Heisei
AI JP 91-68988 19910308
DT Patent
LA Japanese

L5 ANSWER 4 OF 25 CAPLUS COPYRIGHT 1998 ACS

AN 1993:447475 CAPLUS
DN 119:47475
TI Effects of environmental conditions on expression of ***Bacillus*** subtilis .alpha.-amylase in recombinant Escherichia coli
AU Shin, Pyong K.; Nam, Seung H.; Seo, Jin Ho
CS Korea Inst. Sci. Technol., Seoul, 130-650, S. Korea
SO J. Microbiol. Biotechnol. (***1992***), 2(3), 166-73
CODEN: JOMBES
DT Journal
LA English

L5 ANSWER 5 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1993:248641 CAPLUS
DN 118:248641
TI Secretory expression of a glutamic-acid-specific endopeptidase (SPase) from Staphylococcus aureus ATCC12600 in ***Bacillus*** subtilis
AU Kakudo, Shinji; Yoshikawa, Kazumasa; Tamaki, Mikio; Nakamura, Etsuo; Teraoka, Hiroshi
CS Shionogi Res. Lab., Shionogi and Co., Ltd., Osaka, 553, Japan
SO Appl. Microbiol. Biotechnol. (***1992***), 38(2), 226-33
CODEN: AMBIDG; ISSN: 0175-7598
DT Journal
LA English

L5 ANSWER 6 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1993:184564 CAPLUS
DN 118:184564
TI ***Gene*** expression using gram-positive bacteria
AU Imanaka, Tadayuki
CS Osaka Univ., Suita, 565, Japan
SO Harnessing Biotechnol. 21st Century, Proc. Int. Biotechnol. Symp. Expo., 9th (***1992***), 18-22. Editor(s): Ladisch, Michael R.; Bose, Arindam. Publisher: ACS, Washington, D.C.
CODEN: 58ODAU
DT Conference
LA English

L5 ANSWER 7 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1993:2955 CAPLUS
DN 118:2955
TI Cloning and expression of ***gene*** for alkaline protease Ya of ***Bacillus***
IN Tobe, Seiichi; Odera, Motoyasu; Asai, Yoshio
PA Lion Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
PI JP 04197182 A2 ***19920716*** Heisei
AI JP 90-327110 19901128
DT Patent
LA Japanese

L5 ANSWER 8 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1992:505715 CAPLUS
DN 117:105715
TI G6 amylase of alkalophilic ***Bacillus*** and its ***gene*** cloning
IN Horikoshi, Koki; Shirokizawa, Osamu
PA JGC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
PI JP 04027392 A2 ***19920130*** Heisei
AI JP 90-133726 19900523
DT Patent
LA Japanese

L5 ANSWER 9 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1992:208789 CAPLUS
DN 116:208789
TI Construction of an Escherichia coli export-affinity vector for expression and purification of foreign proteins by fusion to cyclomaltodextrin glucanotransferase
AU Hellman, Jukka; Mantsala, Pekka
CS Dep. Biochem., Univ. Turku, Turku, SF-20500, Finland
SO J. Biotechnol. (***1992***), 23(1), 19-34
CODEN: JBITD4; ISSN: 0168-1656
DT Journal
LA English

L5 ANSWER 10 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1992:16397 CAPLUS
DN 116:16397
TI A new pleiotropic mutation affecting purine metabolism, sporulation and biosynthesis of exoenzymes in ***Bacillus*** subtilis
AU Maznitsa, I. I.; Nudler, A. A.; Burd, G. I.
CS Inst. Genet. Select. Ind. Microorg., Moscow, 113545, USSR
SO Genetika (Moscow) (***1991***), 27(6), 983-90
CODEN: GNKAA5; ISSN: 0016-6758
DT Journal
LA Russian

L5 ANSWER 11 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1991:158541 CAPLUS
DN 114:158541
TI Molecular cloning of ***Bacillus*** sutilis ***DNA*** associated with extracellular protease inhibition
IN Furuya, Yoshio; Honjo, Masaru; Nakayama, Akira; Fukazawa, Keiko
PA Agency of Industrial Sciences and Technology, Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
PI JP 02207790 A2 ***19900817*** Heisei
AI JP 89-27492 19890208
DT Patent
LA Japanese

L5 ANSWER 12 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1991:20849 CAPLUS
DN 114:20849
TI A pleiotropic mutation affecting purine metabolism in ***Bacillus*** subtilis
AU Maznitsa, I. I.; Nudler, A. A.; Burd, G. I.
CS Inst. Genet. Sel. Ind. Microorg., Moscow, 113545, USSR
SO FEMS Microbiol. Lett. (***1990***), 72(1-2), 173-6
CODEN: FMLED7; ISSN: 0378-1097
DT Journal
LA English

L5 ANSWER 13 OF 25 CAPLUS COPYRIGHT 1998

ACS
AN 1990:546166 CAPLUS
DN 113:146166
TI A novel ***Bacillus*** subtilis ***gene*** involved in
negative control of sporulation and degradative-enzyme production
AU Honjo, Masaru; Nakayama, Akira; Fukazawa, Keiko; Kawamura, Koichi;
Ando, Kazunori; Hori, Michiko; Furutani, Yoshio
CS Cent. Res. Inst., Mitsui Toatsu Chem., Inc., Chiba, 297, Japan
SO J. Bacteriol. (***1990***), 172(4), 1783-90
CODEN: JOBAAY; ISSN: 0021-9193
DT Journal
LA English

L5 ANSWER 14 OF 25 CAPLUS COPYRIGHT 1998
ACS
AN 1990:494632 CAPLUS
DN 113:94632
TI Protoplast transformation of alkalophilic ***Bacillus*** sp. by
plasmid ***DNA***
AU Usami, Ron; Kudo, Toshiaki; Horikoshi, Koki
CS Res. Dev. Corp. Japan, Riken Inst., Wako, 351-01, Japan
SO Starch/Staerke (***1990***), 42(6), 230-2
CODEN: STARDD; ISSN: 0038-9056
DT Journal
LA English

L5 ANSWER 15 OF 25 CAPLUS COPYRIGHT 1998
ACS
AN 1989:510259 CAPLUS
DN 111:110259
TI Molecular cloning and expression of ***alkaline*** ***amylase*** ***gene*** of alkalophilic ***Bacillus***
sp. in ***Bacillus*** subtilis and Escherichia coli
AU Bae, Moo; Park, Shin Hae
CS Dep. Biol., Ewha Womans Univ., Seoul, 120-750, S. Korea
SO Sanop Misaengmul Hakhoechi (***1989***), 17(2), 160-4
CODEN: SMHAEH; ISSN: 0257-2389
DT Journal
LA English

L5 ANSWER 16 OF 25 CAPLUS COPYRIGHT 1998
ACS
AN 1987:471827 CAPLUS
DN 107:71827
TI prtR enhances the mRNA level of the ***Bacillus*** subtilis
extracellular proteases
AU Tanaka, Teruo; Kawata, Mutsumi; Nagami, Yoichi; Uchiyama, Hiroo
CS Mitsubishi-Kasei Inst. Life Sci., Machida, 194, Japan
SO J. Bacteriol. (***1987***), 169(7), 3044-50
CODEN: JOBAAY; ISSN: 0021-9193
DT Journal
LA English

L5 ANSWER 17 OF 25 CAPLUS COPYRIGHT 1998
ACS
AN 1987:114364 CAPLUS
DN 106:114364
TI Characterization of the sacQ ***genes*** from ***Bacillus***
licheniformis and ***Bacillus*** subtilis
AU Amory, Antoine; Kunst, Frank; Aubert, Elisabeth; Klier, Andre;
Rapoport, Georges
CS Dep. Biotechnol., Inst. Pasteur, Paris, 75724, Fr.
SO J. Bacteriol. (***1987***), 169(1), 324-33
CODEN: JOBAAY; ISSN: 0021-9193
DT Journal
LA English

L5 ANSWER 18 OF 25 CAPLUS COPYRIGHT 1998
ACS
AN 1986:568747 CAPLUS
DN 105:168747
TI Physiological properties and transformation of alkaline-tolerant
bacteria
AU Yu, Ju Hyun; Chung, Yong Joon; Chung, Kun Sub; Oh, Doo Hwan
CS Dep. Food Eng., Yonsei Univ., Seoul, S. Korea
SO Sanop Misaengmul Hakhoechi (***1986***), 14(3), 239-44
CODEN: SMHAEH
DT Journal
LA Korean

L5 ANSWER 19 OF 25 CAPLUS COPYRIGHT 1998
ACS
AN 1986:401657 CAPLUS
DN 105:1657
TI Molecular cloning and nucleotide sequence of a ***DNA***
fragment from ***Bacillus*** natto that enhances production of
extracellular proteases and levansucrase in ***Bacillus***
subtilis
AU Nagami, Yoichi; Tanaka, Teruo
CS Cent. Res. Lab., Mitsubishi Chem. Ind., Kanagawa, 227, Japan
SO J. Bacteriol. (***1986***), 166(1), 20-8
CODEN: JOBAAY; ISSN: 0021-9193
DT Journal
LA English

L5 ANSWER 20 OF 25 CAPLUS COPYRIGHT 1998
ACS
AN 1986:180782 CAPLUS
DN 104:180782
TI ***Bacillus*** subtilis (natto) plasmid responsible for polyglutamate production encoding
.gamma.-glutamyltranspeptidase
AU Hara, Toshio; Fujio, Yusaku; Ueda, Seinosuke
CS Fac. Agric., Kyushu Univ., Fukuoka, 812, Japan
SO J. Fac. Agric., Kyushu Univ. (***1985***), 30(2-3), 95-105
CODEN: JFAKAU; ISSN: 0023-6152
DT Journal
LA English

L5 ANSWER 21 OF 25 CAPLUS COPYRIGHT 1998
ACS
AN 1986:16047 CAPLUS
DN 104:16047
TI Cloning, sequencing, and some properties of a novel ***Bacillus***
amyloliquefaciens ***gene*** involved in the increase of
extracellular protease activities
AU Tomioka, Noboru; Honjo, Masaru; Funahashi, Kei; Manabe, Kazuaki;
Akaoka, Akiko; Mita, Izumi; Furutani, Yoshio
CS Cent. Res. Inst., Mitsui Toatsu Chem. Inc., Mobara, 297, Japan

SO J. Biotechnol. (***1985***), 3(1-2), 85-96
CODEN: JBITD4
DT Journal
LA English

L5 ANSWER 22 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1983:155852 CAPLUS
DN 98:155852
TI Growth defects of Escherichia coli cells which contain the
gene of an .alpha.-amylase from ***Bacillus*** coagulans
on a multicopy plasmid
AU Willemot, Karine; Cornelis, Pierre
CS Dep. Biol. Mol., Inst. Pasteur, Paris, F-75724, Fr.
SO J. Gen. Microbiol. (***1983***), 129(2), 311-19
CODEN: JGMIAN; ISSN: 0022-1287
DT Journal
LA English

L5 ANSWER 23 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1980:2997 CAPLUS
DN 92:2997
TI Genetic instability of sporulation-associated characters in a
Bacillus subtilis mutant: relationship between sporulation,
segregation and the synthesis of extracellular enzymes (kinetic
studies)
AU Zucca, Joseph; Balassa, Georges; Sousa, J. C. F.; Silva, M. T.
CS Unite Microbiol., CNRS, Montpellier, Fr.
SO J. Gen. Microbiol. (***1979***), 112(2), 283-96
CODEN: JGMIAN; ISSN: 0022-1287
DT Journal
LA English

L5 ANSWER 24 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1978:166519 CAPLUS
DN 88:166519
TI Independent control of the production and localization of
alkaline phosphatase from the production of .alpha.-
amylase and protease in ***Bacillus*** subtilis
AU Hitotsuyanagi, Kazumasa; Yamane, Kunio; Maruo, Bunji
CS Shimonoseki Women's Junior Coll., Shimonoseki, Japan
SO Agric. Biol. Chem. (***1978***), 42(3), 585-92
CODEN: ABCHA6; ISSN: 0002-1369
DT Journal
LA English

L5 ANSWER 25 OF 25 CAPLUS COPYRIGHT 1998 ACS
AN 1974:474762 CAPLUS
DN 81:74762
TI Regulation of neutral protease productivity in ***Bacillus***
subtilis. Transformation of high protease productivity
AU Uehara, Hiroshi; Yoneda, Yuko; Yamane, Kunio; Maruo, Bunji
CS Inst. Appl. Microbiol., Univ. Tokyo, Tokyo, Japan
SO J. Bacteriol. (***1974***), 119(1), 82-91
CODEN: JOBAAY
DT Journal
LA English

=> d 15 ab

L5 ANSWER 15 OF 25 CAPLUS COPYRIGHT 1998 ACS
AB A 5.7 kb EcoRI fragment contg. the ***alk*** . ***amylase***
gene of ***Bacillus*** sp. AL-8 was transformed in B.
subtilis via plasmid pUB110. The enzymic properties of the amylase
produced by the transformants were identical to those of the donor
strain. Thus, the ***alk*** . ***amylase*** activity from
the transformant was max. at pH 10 and 50.degree.. The enzyme was
very stable over the ranges of alk. pH. In order to det. the
location of the ***alk*** . ***amylase*** ***gene***
within the 5.7 kb ***DNA*** fragment, the fragment was subcloned
in E. coli. The ***alk*** . ***amylase*** ***gene*** was
located on a EcoRI fragment of 3.7 kb.

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(FILE 'HOME' ENTERED AT 13:01:22 ON 24 SEP 1998)

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L1 753 S ALKALINE (15A)AMYLASE
L2 118 S BACILLUS AND L1
L3 103 S L2 AND PY<1996
L4 7 S L2 AND PY=1996
L5 25 S L3 AND (GENE OR DNA)

=> log h

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	42.21	42.36

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-0.52	-0.52

SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 13:15:28 ON 24 SEP 1998